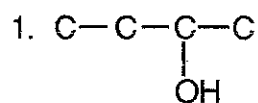


Worksheet: Organic Chemistry

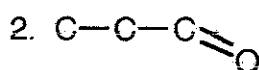
For the following:

- classify the organic compound
- name the organic compound



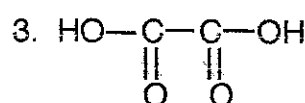
a. _____

b. _____



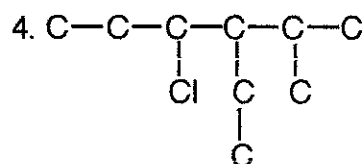
a. _____

b. _____



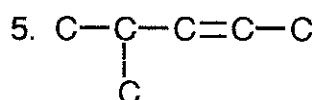
a. _____

b. _____



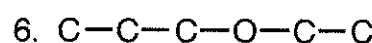
a. _____

b. _____



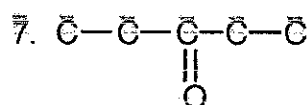
a. _____

b. _____



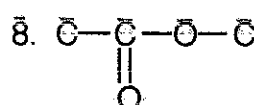
a. _____

b. _____



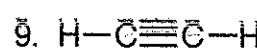
a. _____

b. _____



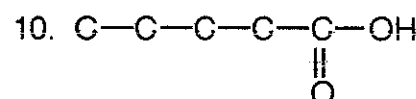
a. _____

b. _____



a. _____

b. _____



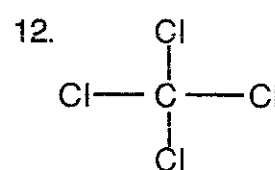
a. _____

b. _____



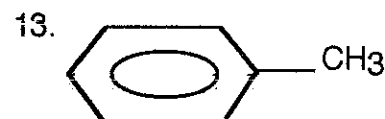
a. _____

b. _____



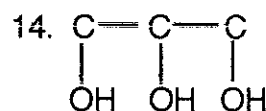
a. _____

b. _____



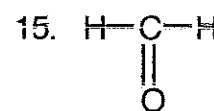
a. _____

b. _____



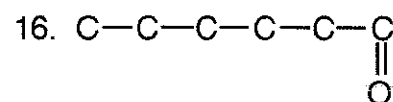
a. _____

b. _____

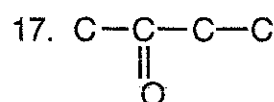


a. _____

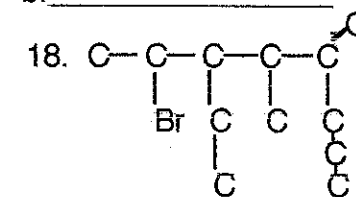
b. _____



a. _____
b. _____



a. _____
b. _____



a. _____
b. _____

Worksheet: Organic Chemistry

For the following, a) draw the correct structure

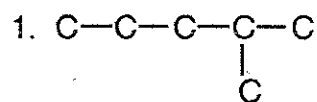
b) classify the compound

Note: you may omit nonfunctional group hydrogens

1. 3-methyl 2-pentanol
2. 3-bromo 6 chloro 5 ethyl 4,4 dimethyl 1-heptene
3. carboxylic acid from insect bites
4. formaldehyde
5. acetic acid
6. grain alcohol
7. the smallest ketone
8. styrene
9. ethyl propanoate
10. butanal
11. a primary alcohol
12. a secondary alcohol
13. a tertiary alcohol
14. diethyl ether
15. benzoic acid
16. 3-octyne
17. 3-hexanone
18. two compounds that could be made by the oxidation of ethanol
19. made by the oxidation of 3-octanol
20. dehydration of ethanol produces what compound?
21. a component in antifreeze
22. vinegar
23. a food preservative
24. acetone
25. methyl formate

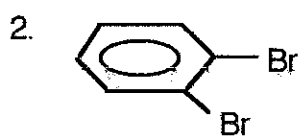
Worksheet: Organic Chemistry

For the following: a. classify the organic compound
b. name the organic compound



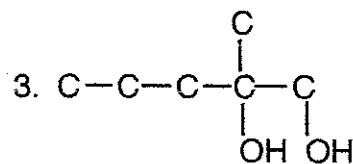
a. _____

b. _____



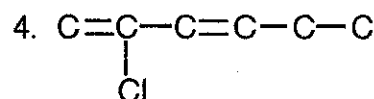
a. _____

b. _____



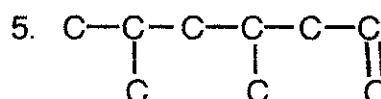
a. _____

b. _____



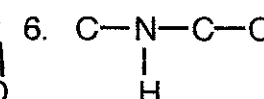
a. _____

b. _____



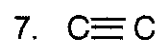
a. _____

b. _____



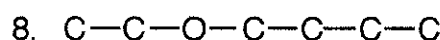
a. _____

b. _____



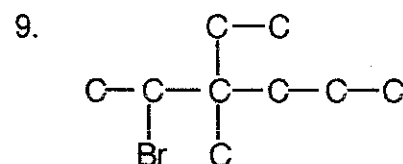
a. _____

b. _____



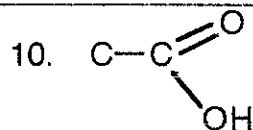
a. _____

b. _____



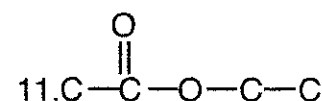
a. _____

b. _____



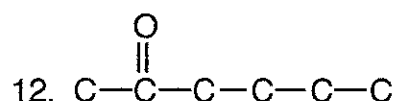
a. _____

b. _____



a. _____

b. _____



a. _____

b. _____

Worksheet: Organic Chemistry

For the following:

- Draw the organic compound
- Classify the organic compound

1. methanol(wood alcohol)

2. grain alcohol

3. benzene

4. paradichlorobenzene

5. acetone

6. cyclopropane

7. toluene

8. formaldehyde

9. formic acid

10. acetic acid

11. oxalic acid

12. benzoic acid

13. methyl acetate

Lab: Preparation of Esters

When an organic acid reacts with an alcohol, an ester is formed. Esters have pleasant odors and are frequently found in plants and fruits. A general equation showing the formation of an ester is:

The R and R' are alkyl groups such as -CH_3 , C_2H_5 , and C_3H_7 . R and R' may be the same or different. Esters, like salts, are named after the compounds from which they are formed. The first part of the name of an ester comes from the alcohol and the second from the acid. The ester propyl formate is formed from propyl alcohol and formic acid.

Procedure:

1. You will be placing the substances used to make the ester in a small flask equipped with a reflux condenser. The reflux condenser is needed for two reasons. First, this reaction proceeds rather slowly. A high temperature gives a practical rate. Second, the components are volatile. The high temperature changes them into gases which escape. The reflux condenser condenses and returns them to the reaction vessel.
2. Place 5 ml of the alcohol to the small flask. Then add 3 ml of the acid needed to make the ester also into the flask. Next, add 8 to 10 drops of concentrated sulfuric acid which acts as a catalyst. You may also need to add a couple of boiling chips into the flask. (Ask your teacher if they are necessary for your ester). These boiling chips should not be thrown out at the end of the experiment since they can be used again. Note: the directions may be a little different for each ester you are producing so research is necessary for this part!!!!
3. CAUTION: Do not heat the reaction mixture directly with a flame, since the organic liquids and their vapors are flammable. Clamp the container in an upright position partially immersed in a 250 ml beaker about half full with water. Heat the hot water bath solution on a wire gauze pad over a hot plate until the reaction mixture is gently boiling. Continue to heat for about 15 minutes. Allow to cool completely. Use a wafting motion to detect the characteristic odor of the ester in the flask.
4. Pour the ester in the sink in the hood when you are done. Be sure there are no open flames when you are doing this!!

Processing the Data:

1. Write the equation for the ester you made using: a. words, b. symbols, c. structural formulas(showing the water coming out), d. type of odor produced.
2. Describe the uses of esters and how they are made(general format)
3. Through research, find three other esters and write their: a. name equation, b. symbol equation, c. structural formula equation(showing how they are made), d. type of odor produced.

Lab: Preparation of Esters

I. Title

II. Purpose

III. Procedure

IV. Data. Get it signed!!!

1. Name the alcohol used _____
Write the formula of the alcohol used _____
State the mass/volume of alcohol used _____ (don't forget units!!)
2. Name the acid used _____
Write the formula of the acid used _____
State the mass/volume of the acid used _____ (don't forget units!!)
3. Name the catalyst used _____
Write the formula of the catalyst used _____
State the number of drops of the catalyst used _____

V. Analysis

1. Write the equation for the ester you made using:
 - a. words
 - b. symbols
 - c. structural formulas (don't forget to show the water coming out!!)
 - d. odor produced
2. Describe three uses of esters and how they are made (general format)
3. Find three other esters besides the one you made. Write their:
 - a. name equation
 - b. symbol equation
 - c. structural formula equation showing how the water comes out
 - d. odor produced

VI. Conclusion

Two paragraphs: Tell me what you learned, and How do you know if you accomplished the purpose?